

HOYA NEW



A photo taken in Samoa.

Oh There it is !
A pdf publication devoted to the Genus
Hoya ISSN 2329-7336
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Editor:
Dale Kloppenburg

Contents

When a species is collected from the wild, I feel it is wise to identify it, propagate it and name it. In this way it will eventually get it into commercial channels, be distributed to all those interested in this genus and thus be preserved. If in the future the species is lost through natural causes or forest destruction it will still be here on earth in your collection.

Correction, My mistake, I apologize: I hereby withdraw the name *Eriostemma ramosii* and its diagnosis published in New Hoya vol., 4-4 as it had been previously been published as *Eriostemma davaoense* Kloppenburg in New Hoya Vol. 2-3. This was pointed out by Fernando B. Aurigue (Philippines) he is an astute, thorough researcher and publisher: see his "A collection of Philippine Hoyas and their Culture". No reviewer caught my blunder !!!

The following new species are presented in PDF format with ISSN number.

1. **Hoya martinii** Kloppenburg & Mendoza
2. **Hoya parvapollinia** Kloppenburg & Mendoza
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Hoya martinii Kloppenburg & Mendoza

ISSN 2329-7336

Hoya martinii Kloppenburg & Mendoza, sp. nova, Holotypus 254954 (PNH) hic designatus. Frutex scandens, inflorescentiis exceptis glabra, ramis teretibus, foliis carnosus ellipticus, basi obtusis, apice apiculata 5.5-11.5 cm longis et 2.4-3.7 cm latis, plinervis; umbelliformibus pedicelli gracilibus filiformibus 1.1 cm longis et 0.06 cm diametro. Calyces segmentis triangularibus, non ciliatus 0.11 cm longis et 0.08 cm latis, cum ligulae; corolla rotate ca. 0.76 cm diametro complanatus, penta lobata usque infra medium, lobis ovato triangularis, extus glabram, intus pubescentibus, centram glabra; coronae lobus anteriore spatulate dorso concavo, lobus posteriore ascendente, obtusis et emarginatus, subtus usque ad basin canaliculatis. Similis *Hoya bifunda* Kloppenb., Siar, Cajano, Mendoza, Guevarra & Carandang 2013 partes maximam partem et sepala ciliatus; coronae exterius lobus apex non emarginate, sed differ.

This new species is most similar to *Hoya bifunda* Kloppenburg, Siar, Cajano, Mendoza, Guevarra & Carandang 2013 but most parts are smaller and it has non-ciliate sepals. In addition, this species has an emarginate outer coronal lobe apex due to narrow side lobes which meet at the apex. This new species is named for George Mendoza's son.



Calyx & pedicel: enlarged ca. 25x. Pedicel is terete, glabrous, 1.1 cm long and 0.06 cm in diameter, enlarged only slightly at calyx base.



Calyx top view enlarged ca. 18x. Sepals are glabrous on both surfaces. Sepals 0.11 cm long and 0.08 cm widest; ligules are present.



Ovaries: short domed, glabrous, 0.08 cm tall and the pair base is 0.07 cm wide.



Corolla: ventral surface enlarged ca. 21x. This surface is glabrous. Cut more than half way.

Sinus – sinus	0.21 cm
Sinus – center	0.15 cm
Sinus – apex	0.28 cm
Apex – center	0.38 cm
Widest	0.25 cm



Corolla inside surface enlarged as above. This surface is uniformly pubescent. Apex is acute, broadest below the lobe middle.



Corona: ventral (bottom) view ca. 20x. Surfaces are glabrous. Lobes are channeled to near the central column; lobe sides diagonally sulcate; apical end obtuse emarginate. Column is clear in surrounding area, 0.02 cm tall, thin walled. Anther wings that protrude very little are acute ended.



Corona dorsal (top) view, enlarged as above. Inner lobes are spatulate, keeled and meet in the center. Dorsal part is broad and concave, parallel sulcate with obtuse outer apex, emarginate from lower side; shelves meeting at apex.

Apex – apex	0.15 cm
Widest	0.08 cm
Ret. – ret	0.06 cm
Ret. – center	0.05 cm
Aw. – aw.	0.09 cm
Aw. – center	0.08 cm



Inside view of a flower showing the style in lower center, small cone-shaped. Note the dorsal view of the coronal lobes which are concave with no forward umbo, while sides have rounded edges.



Pollinarium enlarged ca. 230x.

Pollinium

length 0.24 mm
widest 0.10 mm

Retinaculum

length 0.07 mm
shoulder 0.05 mm
waist 0.04+ mm
hip 0.05 mm
ext. 0.03 mm

Translator

length 0.05 mm
depth 0.02 mm

Caudicle

bulb 0.02 mm

Translator/caudicle Type:
ls/o

Pollinia end type: F

Retinacula Type: LS

Leaves: opposite, petiolate, glabrous, elliptic with sub-obtuse base and acute apex; plinerved with the nerves a little lighter in color than the leaf surface, and nerve angle is 22°; petiole is curved, 1.0 cm long.

Leaf Measurement: in centimeters.

	Length	Width	Petiole Length
1)	11.5	3.6	2.1
2)	10.9	3.7	2.5
3)	9.2	3.4	1.2
4)	8.5	3.0	1.2
5)	6.8	2.8	0.7
6)	6.0	2.5	
7)	5.5	2.5	
8)	6.2	3.0	
9)	6.0	2.4	

Range: 5.5-11.5 2.4-3.7 0.7-2.5

Stem: with many adventitious roots.

Photomicrographs and data of flower parts from flowers sent in vial by George Mendoza on 10 October 2011.

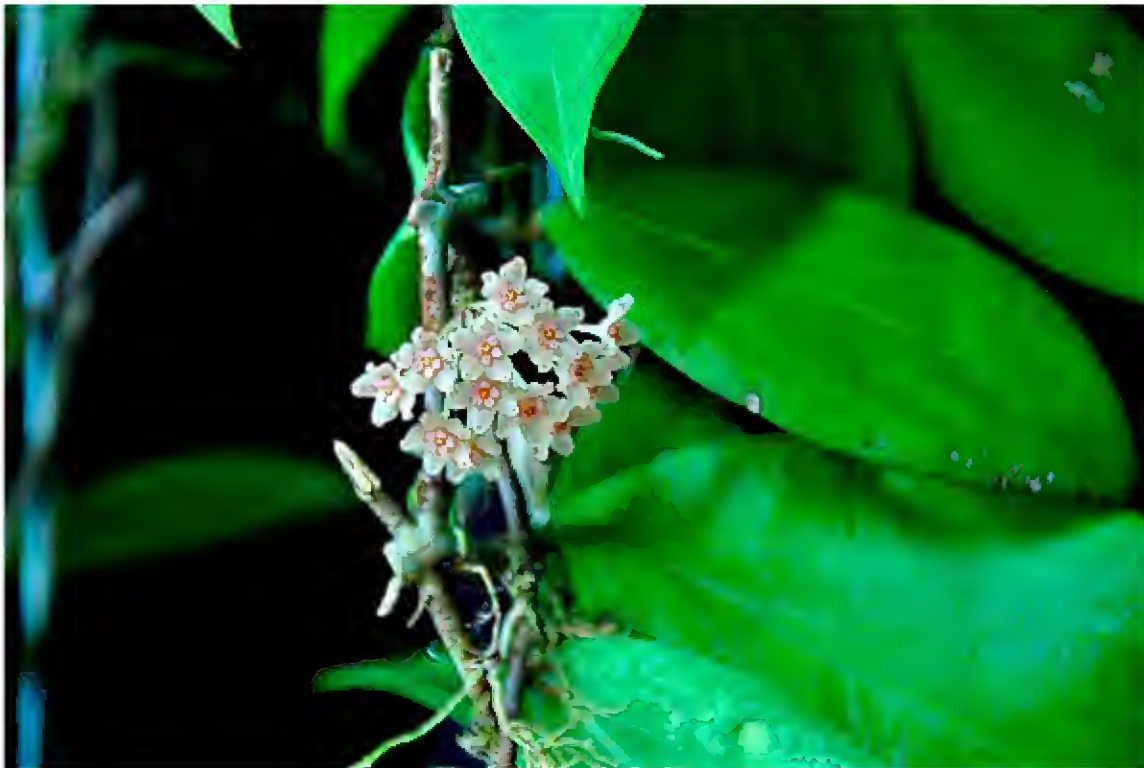
Collection number: **GM-4.** From cultivated plant originally collected at Real, Quezon Province, Luzon Island, Philippines at 400-600 m altitude.

Photo of cutting sent by George Mendoza.





0417 0420



13 flowers per cluster





Contributors:

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A reduced copy of the Holotype Sheet 254954 (PNH).



Hoya parvapollinia Kloppenburg & Mendoza

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Hoya parvapollinia Kloppenburg & Mendoza, sp. nova, Holotypus 254955 (PNH) hic designatus. Non similes ullus Philippine hoyas species, aliquot similis *Hoya bilobata* Schlechter 1906, sed sepalis non ciliatus contraste ciliatis et corolla diametro brevior 0.70 cm contraste 0.82 cm et pollinia multi brevior 0.12 mm longis contraste 0.23 mm; exsimilis *Hoya camphorifolia* Warburg 1904, sed petiole longior 1.1-1.6 cm contraste 0.7 cm et corolla diametro grandior 0.07 cm contraste 0.06 cm et intus pubescentibus non papillose et pollinia 0.12 mm longis contraste 0.31 mm; pollinia amplitudo similes *Hoya bilobata* Schlechter 1906 0.23 mm longis contraste 0.22 mm, differt.

This species has pollinia closest to *Hoya bilobata* Schlechter 1906, but 0.01 mm shorter. The corona is most similar to *Hoya bifunda* Kloppenb., Siar, Cajano, Mendoza, Guevarra & Carandang 2013, but larger. Compared to *Hoya camphorifolia* Warburg 1904, the leaf petioles are much longer, the corolla is larger in diameter (0.07 cm vs. 0.06 cm), the dorsal surface of the corolla is pubescent not papillose, the pollinia is shorter (0.12 mm vs. 0.31 mm), among other differences. Collected by George Mendoza et al. at Aurora Province, Philippines. Named for the very small pollinia.

Below are photos and detailed measurements:



Pedicel: section enlarged ca. 70x. It is curved, terete, glabrous, 1.3 cm long and 0.05 cm in diameter.

Calyx: side view enlarged ca. 22x. The sepals are linear, 0.10 cm long and 0.04 cm at the widest near the base; granulate outside, slick glabrous on the inside with a few cilia.

Ovaries: dome-shaped, glabrous, 0.06 cm tall and pair base is 0.05 cm wide.

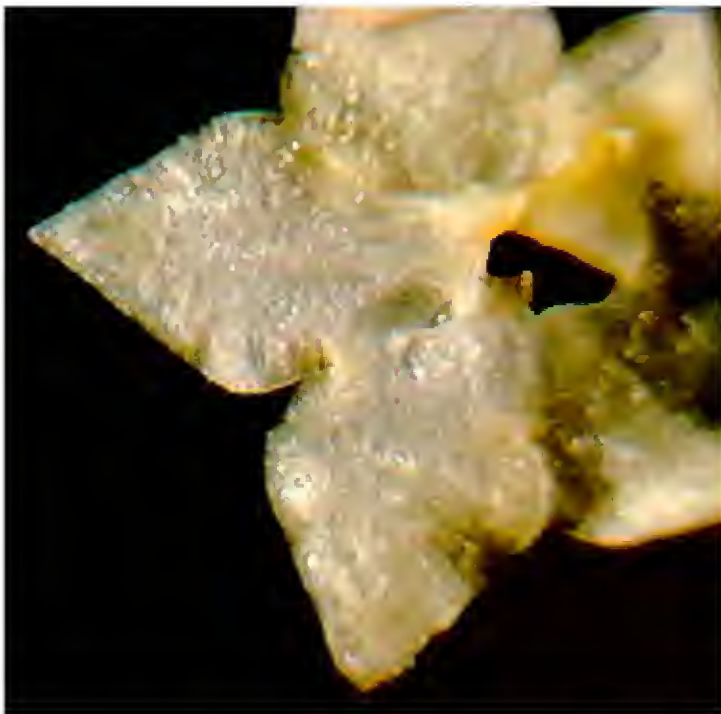


Corolla: ventral surface enlarged ca. 15x. This surface is glabrous. At anthesis, the corolla is rotate with edges and apex rolled under.



Sinus – sinus	0.20 cm
Sinus – center	0.16 cm
Sinus – apex	0.22 cm
Apex – center	0.35 cm
Widest	0.22 cm

The corolla is cut more than half way. Lobes are broad above the sinuses; outer apex is acute. Diameter, if flattened, is 0.70 cm. Dorsal center is somewhat sunken.



Corolla: dorsal surface enlarged as above. The surface is evenly pubescent even at the lobe apices, but glabrous immediately around the central column.



Corona: ventral view enlarged ca. 24x. The lobes are channeled to near the central column, with rounded central ends. Outer apex curves down slightly and is emarginate at the apex. Anther wings are acute and extend only slightly from the sinuses. Central column is thin walled and relatively long. Outer apex is raised.

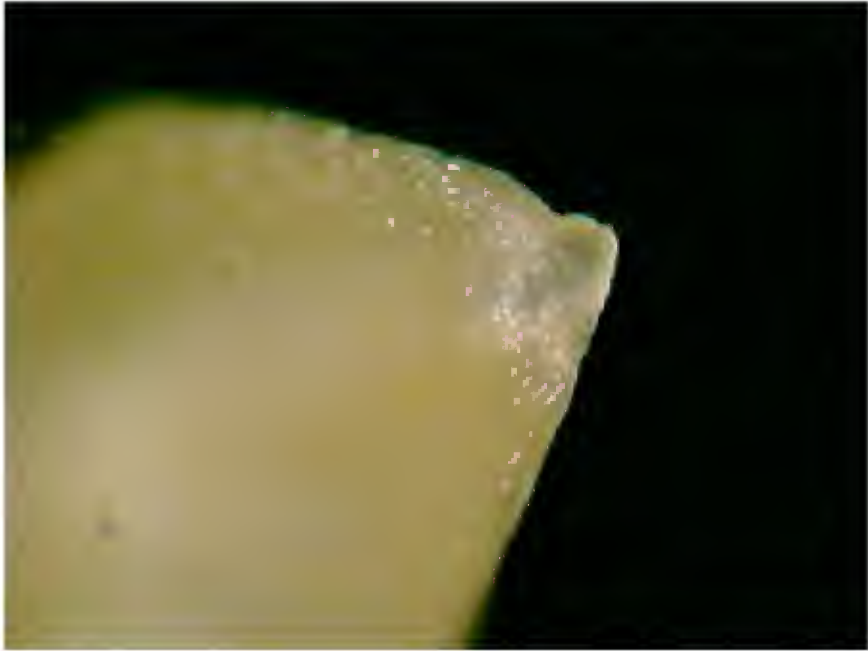


Corona: dorsal surface enlarged as above. Retinacula have been removed. All surfaces are glabrous. Inner lobes are spatulate-terete and meet in the center raised just a little. Dorsal part is concave with a forward central umbo. Edges are rounded; outer apex is emarginate and sub-acute.

Apex – apex	0.15 cm
Widest	0.08 cm
Ret. – ret.	0.05 cm
Ret. – center	0.04 cm
Aw. – aw./center	0.08 cm



Corona dorsal center enlarged to show the granulate inner lobe surfaces and shape, actually more terete than spatulate. Anther wing apices are acute extending from the coronal sinuses slightly.



Coronal lobe dorsal outer apex showing the granulate surface; striate surface line the inner lobes above.



Pollinarium enlarged ca. 230x. Here the right pollinium is turned inward on its axis, and the retinacula is also turned so the head is turned outward (reversed). This is a small pollinarium.

Pollinium

length 0.12 mm
widest 0.10 mm

Retinaculum

length 0.08 mm
shoulder 0.07 mm
waist 0.05 mm
hip 0.06 mm
ext. 0.03 mm

Translators

length 0.05 mm
depth 0.01 mm

Translator/caudicle Type: ls/o

Caudicle
bulb diam. 0.05 mm

Pollinia end type: T

Retinacula type: S

Leaves: opposite, petiolate, glabrous, elliptic, with sub-cuneate to sub-obtuse base and acuminate apex; plinervation is lighter colored than the leaf surface; dorsal part is convex; petiole is curved and terete.

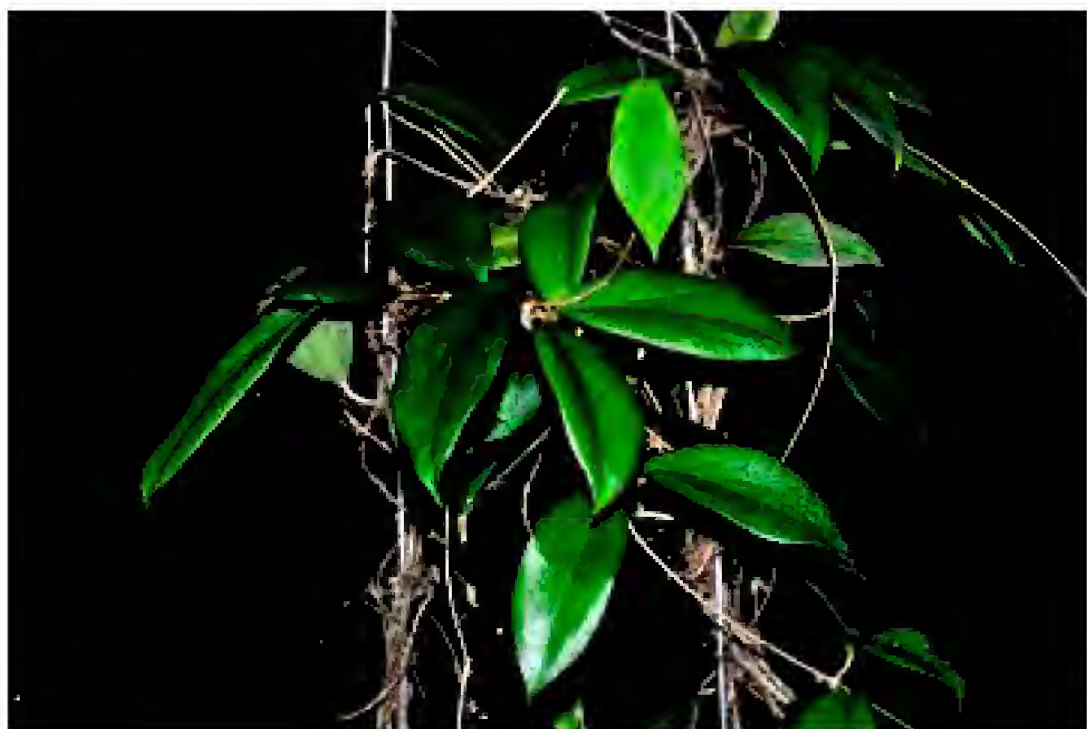
Leaf measurement: in centimeters.

	Length	Width	Petiole Length
1)	9.7	3.8	1.5
2)	8.5	3.8	1.6
3)	9.7	3.1	1.4
4)	6.9	2.8	1.1
5)	5.6	2.9	1.1
<hr/>			
Range:	5.6- 9.7	2.8-3.8	1.1-1.6

Stem: with adventitious roots.

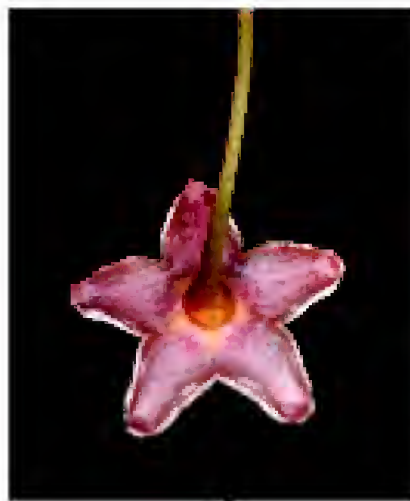
Collection Number: **GM-46.**

All pictures below by George Mendoza.





About 19 flowers per cluster.



DSC 9858-9713

References:

1. *Hoya bifunda* Kloppenburg, Siar, Cajano, Mendoza, Guevarra & Carandang in Hoya New 1(3):7 (2013, e-published).
2. *Hoya camphorifolia* Warburg in Perkins Fragmentia Florae Philippinae 1 (1904) 129.
3. *Hoya bilobata* Schlechter in Philippine Journal of Science I Supp. (1906) 301-302.

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A reduced copy of the Holotype Sheet 254955 (PNH).



PHILIPPINES GM-26

APOCYNACEAE-ASCLEPIADOIDEAE

Hoya philippinensis A. E. S. & Mendoza

Shrublet 2 m tall, 10 cm dbh from Aurora Province, Luzon

Leaves alternate, elliptic, 10-15 cm long, 4-6 cm wide, apex and elliptic with

asymmetric apex and asymmetric apex

and apex, apex and apex

Flowers small, red, 1-2 cm

Photo taken

Replenished name: Collector: George K. Mendoza

Prepared by: John Michael M. Agcaonli

Hoya navicula Kloppenburg & Mendoza

ISSN 2329-7336

Hoya navicula Kloppenburg & Mendoza, sp. nova, Holotypus 254956 (PNH) hic designatus, similes *Hoya camphorifolia* Warburg 1904 sed sepala late triangulis non lanceolatis subacutis. Corolla grandior 0.82 cm contrastre 0.60 cm. Pedicellis 1.8 cm longus, 0.6 cm diametro; foliis glabris ovato 10.1-14.3 cm longis 3.2-5.1 cm latis; apice sub-acuminatus acutis basi plerumque cuneatus–sub-cuneatus reticulatis subdistinctis; aliquot rotundatis et sub-pinnatus. Sepalis 0.12 cm longis et 0.09 cm latis triangularis subacutis glabrous; corolla 0.82 cm diametro complanatus, extus glabra, intus puberulous; coronus ellipticus navicularibus, supra concavis, apice interno sub-erecto dentate, externo obtuso emarginate, dorso margo et centro carinato.

This species differs from *Hoya camphorifolia* Warburg 1904 by having leaves that are somewhat dimorphic, with the majority of the leaves elliptic with anastomosing plinerved venation; and a few leaves being more ovate, and broader in the center with the venation approaching pinnate rather than plinerved, leaves for the most part are also longer. In addition, the flattened corolla is larger, and the pedicels and sepals are a little longer among other differences. Compared to *Hoya bicolensis* Kloppenburg, Siar & Cajano 2012, the leaves here are much larger (10.1-14.3 x 3.2-5.1 cm vs. 4.8 - 10.8 x 2.5-3.4 cm), the pedicels are longer (1.8 x 0.04 vs. 1.5 x 0.06 cm), the ovaries are columnar instead of dome shaped, and 0.08 cm vs. 0.11 cm. Most of all, the coronal lobes here are 0.20 cm long with rounded outer apices, whereas *H. bicolensis* has lobes 0.24 cm long with acute to sub-acute outer apices. Named for the boat shaped coronal lobes.

Details and measurements follow:



Pedicel, calyx and ovaries enlarged ca. 27x. The pedicel is glabrous, 1.8 cm long and 0.04 cm in diameter. The sepals are glabrous, 0.12 cm long and 0.09 cm at the widest, with a small basal overlap, sub-triangular with a rounded apex. They do not reach the corolla sinuses. The ovaries are columnar, glabrous, 0.08 cm long and the base pair are 0.07 cm wide, apex slightly lip-shaped.



Corolla: ventral surface enlarged ca. 15x. This surface is glabrous. Lobes are deeply cut.

Sinus – sinus	0.20 cm
Sinus – center	0.17 cm
Sinus- apex	0.30 cm
Apex – center	0.41 cm
Widest	0.27 cm



Corolla dorsal surface enlarged as above. This surface is finely and evenly puberulous. See the flower photos below.



Corona: ventral surface enlarged ca. 13x. The lobes are channeled to near the central column and with sulcate sides. Central column relatively thin walled and clean around its outside. Lobe outer apex is emarginate. Anther wing apices protrude just slightly from the sinuses.



Corona: dorsal view enlarged as above. All surfaces are glabrous. Lobes are sub-boat-shaped. Inner lobes terete and slightly keeled, and touch in the center. Dorsal part is concave with a low central ridge, rounded edges, rounded outer apex, and emarginated. Scales relatively thick.

Apex – apex	0.20 cm
Widest	0.11 cm
Ret. – ret/center	0.06 cm
Aw. – aw./center	0.14 cm



Corona scale, side view enlarged ca. 20x. Scale is about 0.06 cm thick. Anther at left with a yellow pollinia attached bent down under inner lobe apex. Anther wings are deeply scythe-shaped.



Corona ventral surface showing the diagonal sulcate surfaces forming the central channel. Most emarginate apex outer coronal lobes have either side shelved reaching the apex or, as in this case, the very apex is turned under forming an opening at the beginning of the channel.



Photos of flower clusters by George Mendoza.





Pollinarium enlarged ca. 180x. I had a difficult time trying to find pollinaria where the pollinia were attached to the caudicles. Only one among 15. Here a pollinium turned down at side of the retinaculum. Difficult to determine the translator/caudicle type but I would judge it is ls/o.

Pollinium

length	0.34 mm
widest	0.15 mm

Retinaculum

length	0.17 mm
shoulder	0.11 mm
waist	0.08 mm
hip	0.09 mm
ext	0.08 mm

Caudicle

bulb diam.	0.05 mm
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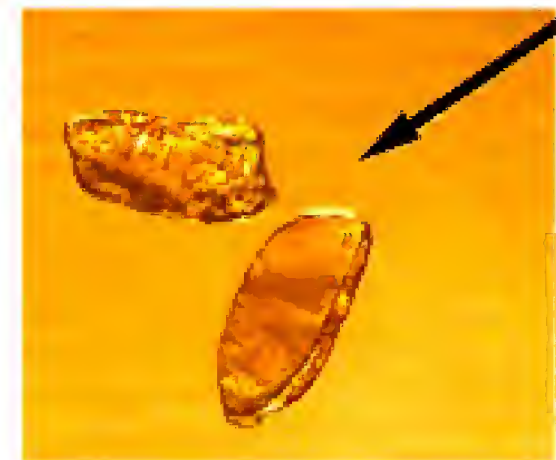


Photo of two pollinia above, enlarged ca. 50x

Translator/caudicle type: ls/o ?

Pollinia end type: RT

Retinacula type: S

Leaves: elliptic, opposite, glabrous, petiolate with sub-cuneate to sub-obtuse base, apiculate apex, anastomosing plinervation, nerves lighter than the upper leaf surface,

lighter green lower surface. A few leaves more ovate, much broader in the middle, with obtuse base and near pinnate venation.

Leaf Measurement: in centimeters.

	Length	Width	Petiole Length
1)	14.3	4.9	2.0
2)	13.1	5.1	2.0
3)	12.0	4.3	1.9
4)	11.8	4.3	2.4
5)	10.1	3.2	1.5
Range:	10.1-14.3	3.2-5.1	1.5-2.4

Stem: with adventitious roots.



Pictures of flowers below
by George Mendoza.

Collection number: **GM-71**. Collected by George Mendoza et al. at Catanduanes Province, Bicol Region, Philippines.

DSC 0024/31/33/58/62/66/68/72. Flower cluster of ca. 20 flowers.





References:

1. *Hoya bicolensis* Kloppenburg, Siar & Cajano in New Species of *Hoya* R. Br. (Apocynaceae). Journal of Nature Studies 11(1&2):40 (2012)
2. *Hoya camphorifolia* Warburg in Perkins Fragmentia Florae Philippinae 1 (1904) 129

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A reduced copy of the Holotype Sheet 254956 (PNH).



PHILIPPINES GM-77

APOCYNACEAE-ASCLEPIADOIDEAE

Hoya navicula Kloppenb. & Mendoza

Cultivated plant, originally collected from Catanduanes
Province, Batangas Region

Leaves are opposite, petiolate, generally elliptic with
5-8 veins to midrib, blue and apiculate apex,
the margins are undulate, the base of the leaves
is cuneate with a small, dark, more or less
triangular spot.

Flowers are small, tubular, with
a long, slender, and slightly curved corolla.

Photo taken

Replicates: none Collector: George K. Mendoza

Prepared by: John Michael M. Agcaoli

Hoya santafeensis Kloppenburg & Mendoza

ISSN 2329-7336

Hoya santafeensis Kloppenburg & Mendoza, sp. nova, Holotypus 254957 (PNH) hic designatus. Section Acanthostemma (Blume) Kloppenburg. Similis *Hoya rima* Kloppenb., Mendoza & Ferreras 2014 sed corolla diametro complanatus grandior (1.20 cm contraster 1.00 cm) et coronae lobus longior (0.22 cm contrastre 0.16 cm) et lobus interior spatulatus et cum dorsum rima, differt.

This new hoya species is a bilobed species in the Section Acanthostemma. It is most similar to *Hoya rima* Kloppenburg, Mendoza & Ferreras 2014, but the flattened corolla is larger (1.20 cm vs. 1.00 cm) and the coronal lobes are longer (0.22 cm vs. 0.16 cm) with spatulate inner lobe and concave dorsal portion, which are very different from that of *Hoya rima*. Named after the place where it was originally collected.

Detailed measurements and comments with photos follow:



Pedicels: sections with the calyx attached enlarged ca. 20x. They are curved, terete, glabrous, 2.1 cm long and 0.10 cm in diameter. Calyx base is tapered.

Calyx: surface is granulate outside, slick glabrous inside; a few ligules present at the sepal sinuses. Sepals sub-ovate, ciliate, 0.12 cm long and 0.08 cm at the widest.

Ovaries: dome-shaped, glabrous, 0.15 cm tall and pair base is 0.10 cm wide, ends with circular protrusions.



Corolla: ventral surface enlarged ca. 15x.
The surface is glabrous.

Sinus – sinus	0.28 cm
Sinus – center	0.28 cm
Sinus – apex	0.43 cm
Apex – center	0.60 cm
Widest	0.32 cm



Corolla: dorsal view enlarged as above.
The center is sunken slightly; lobes are revolute and pubescent except for the lobe apices which are glabrous. Note the pentagonal thickening around the center.



Corona: ventral surface enlarged ca.15x. The lobes are channeled and the edges are sulcate; center column is short, ca. 0.01 cm, surrounded by bulbous protrusions. Anther wing apices do not protrude.



Corona: dorsal surface enlarged as above. The inner lobes are spatulate and do not reach the center; edges are raised a little and rounded, dorsal part is slightly concave with a domed keel 1.2 way to outer apex which is tapered with bi-lobes slightly beyond also with rounded surfaces.

Apex – apex	0.22 cm
Apex – end	0.25 cm
Center to outer lobes	0.29 cm
Ret. – ret./ center	0.07/0.06 cm
Aw. – aw./center	0.15/0.13 cm

Collection number: **GM-179**. Collected by George Mendoza et al. at Sta. Fe, Nueva, Vizcaya Province, Luzon, Philippines, 400 m asl. All photos from live plants taken by George Mendoza except the pollinarium.

Leaves: opposite, petiolate, glabrous, narrowly linear with cuneate base and acute apex; concave dorsal side with rounded edges and darker green than the rest of the blade.

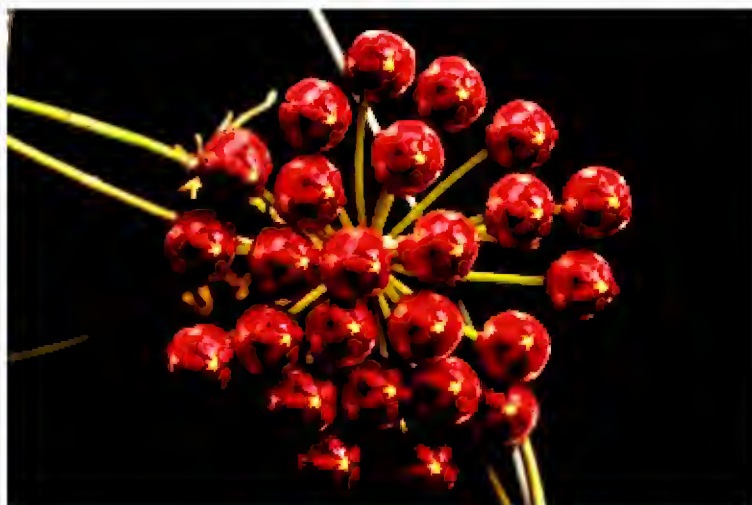
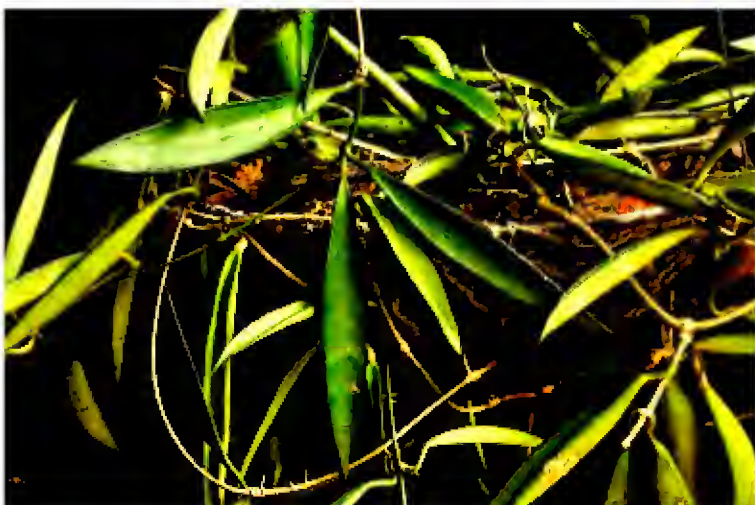
Leaf measurement: in centimeters

	Length	Width	Petiole Length
1.	12.8	1.9	1.7
2.	10.4	1.8	1.6
3.	9.7	1.3	0.8
4.	8.0	1.5	1.4
5.	2.8	1.0	0.7

Range: 2.8-12.8 1.0-1.9 0.7-1.7

Stem: with many adventitious roots.

Peduncle length: 4.4 cm; flower cluster of about 25 flowers geotropic.





Pollinarium enlarged
200x.

Pollinium

length 0.37 mm
widest 0.15 mm

Retinaculum

length 0.10 mm
shoulder 0.06 mm
waist 0.04 mm
hip 0.07 mm
ext. 0.05 mm

Translator

length 0.18 mm
widest 0.05 mm

Caudicle

bulb 0.08 cm x 0.10 mm

Translator/caudicle

type: fb/cw

Pollinia apex type: F

Retinacula type: HB





Reference:

Hoya rima Kloppenburg, Mendoza, & Ferreras in *Hoya New* 2(2):23 (2014, e-published).

Contributors:

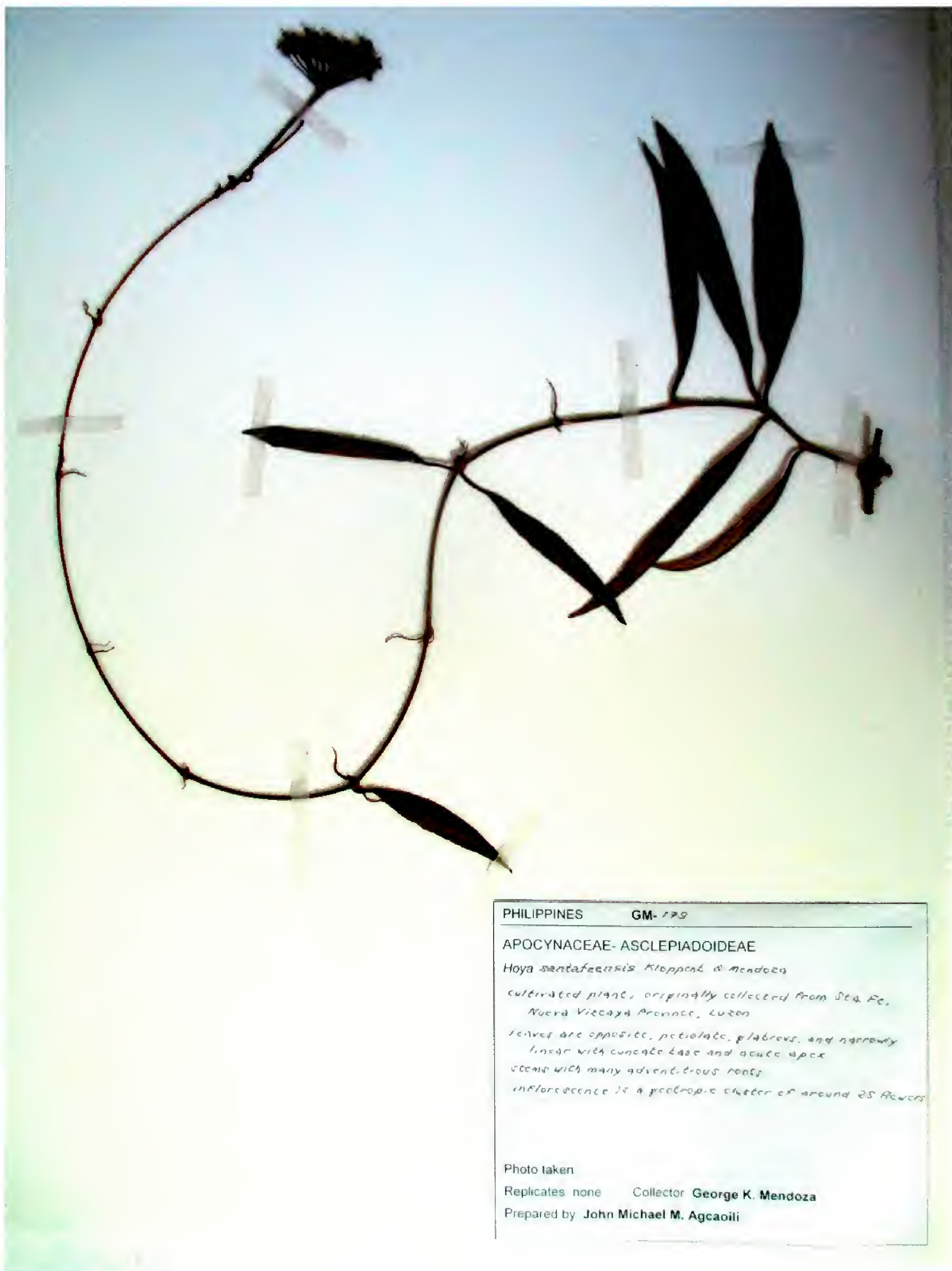
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A reduced copy of the Holotype Sheet 254957 (PNH)



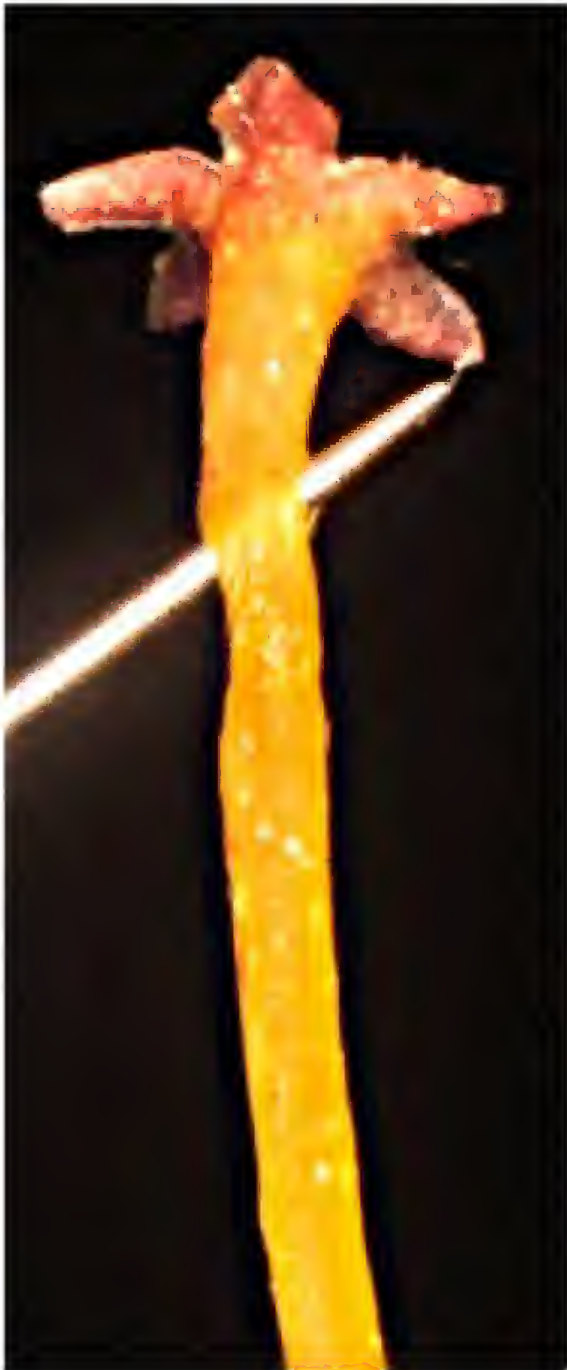
Hoya loheri subsp. tanawanensis Kloppenburg & Mendoza

ISSN 2329-7336

Hoya loheri subsp. tanawanensis Kloppenburg & Mendoza, sp. nova, Holotypus 254958 (PNH). Similis sp. sed pedicellus longior 1.24-1.60 cm contrastre 1.2 cm et corolla diameter complanatus 0.90 cm contrastre 0.70 cm et columnae lonior et pollinia brevior 0.30 mm contrastre 0.43 mm et translator structure, differt.

This subspecies differs from the species in the following characteristics: longer pedicel (1.24-1.60 cm vs. 1.2 cm), larger diameter of the flattened corolla (0.90 cm vs. 0.70 cm), much shorter column on the corona, more dome-shaped coronal head, and shorter pollinia (0.30 mm vs. 0.43 mm).

Following photos and measurements:



Pedicel: with calyx enlarged ca. 25x. It is terete, glabrous, curved, 1.24-1.60 cm long and 0.06 cm in diameter.

Calyx: sepals sub-triangular, granulate outside, slick glabrous inside; ligules present at the sinuses, 0.11 cm long and 0.06 cm at the widest, only a slight basal overlap.

Ovaries: columnar, glabrous, 0.10 cm long and pair base is 0.05 cm wide.





Corolla: ventral surface, enlarged ca. 14x. It is reflexed to slightly revolute, and the surface is glabrous; center above and below slightly domed.



Corolla: dorsal surface enlarged as above. The lobes are pubescent, while the lobe tip and central pentagonal area are glabrous.

Sinus – sinus	0.21 cm
Sinus – center	0.20 cm
Sinus – apex	0.30 cm
Apex – center	0.45 cm
Widest at the sinuses.	



Corona: ventral view enlarged ca. 33x. The center area around the column is glabrous (slick). There are long bilobes tightly pressed together at the outer lobe ends.

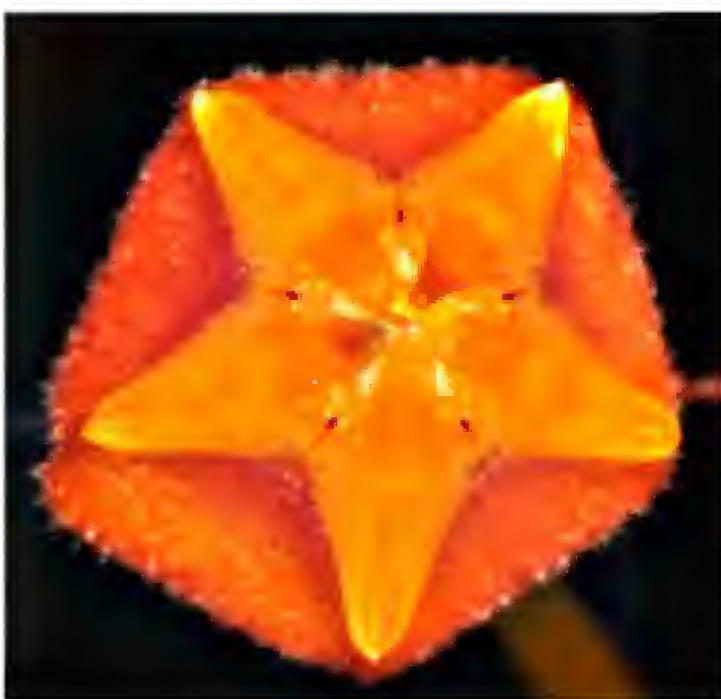


Corona: dorsal side view enlarged as above. The inner lobes are thin and curved over the apical center. They are spatulate.

Bilobed ends	0.06 cm long
Apex – bilobes	0.20 cm



Side view of the whole flower enlarged like the previous picture. The whole structure is unique, seldom seen in other Philippine hoyas species except *Hoya loheri* Kloppenburg 1991, but central column much shorter, coronal lobes and bilobes longer, and bilobes not as round and not distinctly separated. Corona center is more dome-shaped.



Flower dorsal view. All photos taken by George Mendoza except for the pollinaria.



Pollinaria parts enlarged 140x. I was unable to obtain an intact pollinaria even from 6 flowers.

Pollinia

length 0.30 mm
widest 0.15 mm

Retinaculum

length 0.07 mm
overall 0.12 mm
shoulder 0.05 mm
waist 0.04 mm
hip 0.05 mm
ext. 0.05 mm

Translator

length 0.14 mm
base shelf 0.06 mm

Caudicle

bulb. 0.12 x 0.05 mm

Pollinia inner end type:
T (tapered)

Retinacula type: HU
(hands up)

Translator/caudicle type: modified: T (truncate), here outer edge elongated upward culminating in a narrow apical area.

Collection Number: **GM-231**. Collected by George Mendoza et al at Mt. Tanawan, Quezon Province, Luzon, Philippines at an altitude of 350 m asl.



Leaves: opposite, petiolate, glabrous, narrowly elliptic with cuneate base and blunt apex; dorsal surface convex; nervation not visible; rust markings present on leaf surfaces, especially on the ventral surface; leaf edges curl under.

Leaf measurement: in centimeters.

	Length	Width	Petiole Length
6.	5.5	1.4	0.5
7.	4.5	1.4	0.5
8.	3.6	1.3	0.4
9.	2.8	1.3	0.4
10.	2.0	1.1	0.2
Range:	2.0-5.5	1.1-1.4	0.2-0.5

Stem: with very few adventitious roots.

Peduncle: very long, glabrous, terete and green.



About 13 flowers per cluster. *Hoya loheri* has about 22 flowers per cluster.



Contributors:

Dale Kloppenburg, retired: Graduate of Plant Genetics, UC Berkeley; Lt., USNR; Plant Breeder and Research Agronomist; now taxonomist of Genus *Hoya*.

George Mendoza, Landscape Artist, Nurseryman, and Plant Explorer from Quezon City, Philippines (Web site: www.forest-treasures.com).

John Michael M. Agcaoili. Graduate of B. S. Biology, Polytechnic University of the Philippines, Sta. Mesa, Manila, Philippines.

Fernando B. Aurigue. Senior Science Research Specialist, Plant Mutation Breeding Unit, Agriculture Research Section, Atomic Research Division, Philippine Nuclear Research Institute, Commonwealth Avenue, Diliman, Quezon City, Philippines.

A reduced copy of the Holotype Sheet 254958 (PNH)



PHILIPPINES	GM-227
APOCYNACEAE-ASCLEPIADOIDEAE	
<i>Hoya (climber) up to 2 m. thick, Kloppenb. & Mendoza</i>	
cult. stem and branches collected from Mt. Tanawan, Davao, Mindanao, Luzon.	
Leaves are ovate to elliptic, glaucous and narrowly elliptic, 4-10 cm. long, 1-2 cm. wide, and have a distinct mottled pattern on the upper surface.	
Flowers are small, tubular, and have a distinct mottled pattern on the upper surface.	
Fruit is a small, round, red berry.	
Photo taken	
Replicated from	
Collector: George K. Mendoza	
Prepared by: John Michael M. Ageaoli	

Marsdinia mahaweeensis Kloppenburg

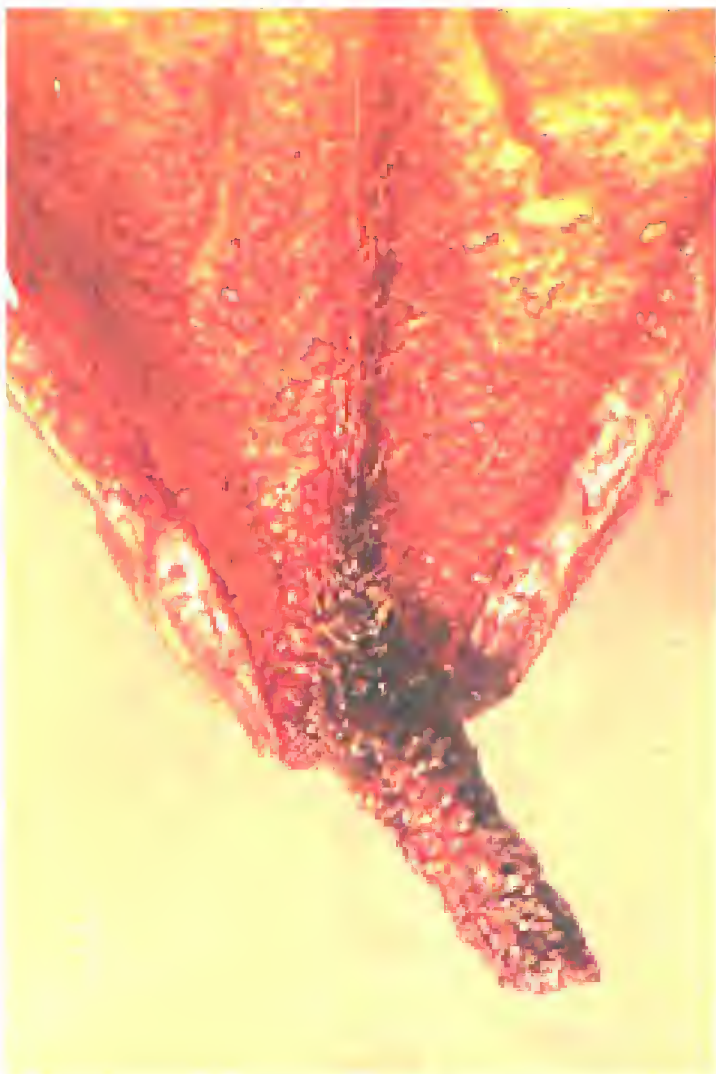
sp. PNH 181 Permanent Herbarium

Celebes. Mt. Mahawee, Tomhon 1200m, Roll 204

ISSN 2329-7336

Marsdinia mahaweeensis Kloppenburg, sp. nova, Typus #181 (PNH) hic designatus, similis *Hoya linavergariae* Kloppenburg & Siar cum coronae lobis longa spumea columba sed coronae lobis binatum non spathulatum; pollinarium unique, retinaculum crassum fere quam longum pollinium; pollinium brevissimus 0.28 mm longum contrastre 0.77 mm, differt. Folia dissimilis pro parte maxima a aliis Marsdinia sp. Genus differt.

This new species is similar to *Hoya linavergariae* but different with the long lobes of the corona forming a column but this species has bifid inner lobes of the corona not spatulate, and the pollinarium is unique with the retinaculum nearly as long as the pollinium, pollinium very short 0.28 cm long vs. 0.77 mm, The pollinia place it in the Genus Marsdinia; the leaves here are not like most Marsdinia sp. but more similar to those of the Genus Hoya.



Lower side of leaf blade base enlarged about 8x. Blade is 4.5 cm long and 1.6 cm at the widest near the center, ovate elliptic with acute apex. Midrib shows below, edges slightly revolute, hair cells near the base and along midrib, enervis.



Peduncle and rachis base broken off.

Peduncle: here 0.55 cm long and 0.12 cm in diameter, short branched, subtended by scales and hirsute, bracteate fasciculate rachis.



Apex of the leaf blade with tip broken off.
Surface is glabrous, rather rough granulate.



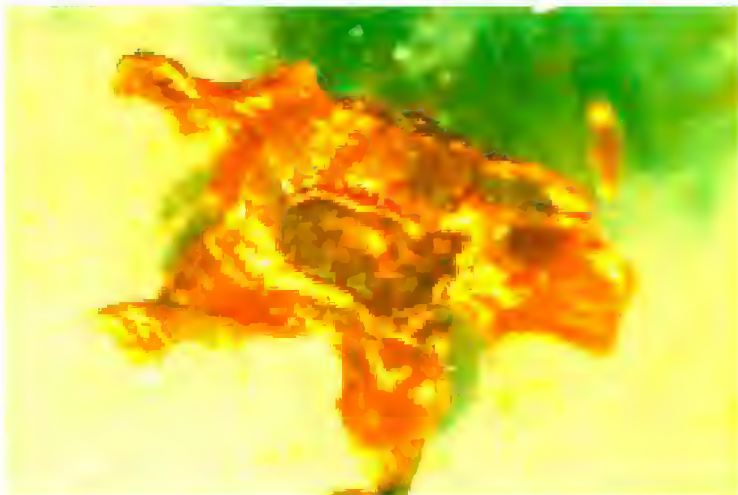
Calyx and ovaries enlarged about 16x.

Sepals: 0.09 cm long, 0.07 cm widest near base, ligules present.

Ovaries: columnar 0.10 cm tall and base pair 0.05 cm wide.



Side view of the corona enlarged about 16x. The column at the base is 0.08 cm long, just above this are the lower lobes with obtuse apices. This portion of the structure is 0.10 cm long and 0.15 cm in diameter. At the top are cupped bilobes 0.20 cm long, these outer bifid ends are thin and free at the ends.



Outside view of the corolla enlarged about 8x. This surface is granulate to the lobes then thinner finer granules or possibly puberulent.

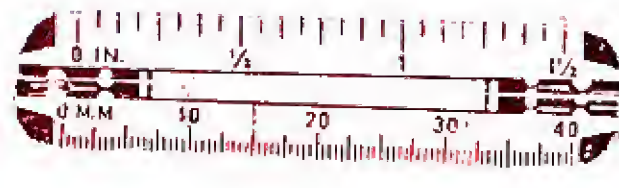
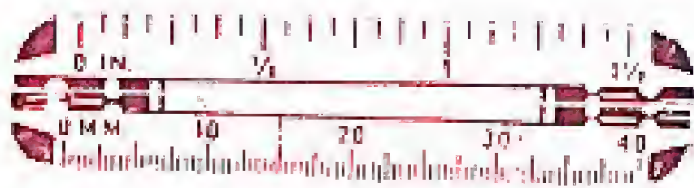
Sinus – sinus	0.20 cm
Sinus – center	0.20 cm
Sinus – apex	0.30 cm
Apex – center	0.40 cm



Another view of the corolla outer surface. There is a collar, difficult to separate from the long corona collar. Collar opening is 0.20 cm and has a 0.18 cm length.



Flower enlarged about 16x with pedicel and calyx below, corolla curved back from the center. Coronal top showing in the center.



View of the top (left) and underside of the leaf (right), enervis, a few hair cells on midrib and near the petiole, othewrwise glabrous. The petiole appears to be grooved above. The leaf edges turn under.

Pollinarium enlarged about 165x.



A very unusual pollinarium for a Hoya, so determined to be in the genus Marsdinia, where the pollinium and not much longer than the bulbous retinaculum. The pellucid edge is possibly along the center reverse side or possibly rudimentary along the inner apex.

Pollinarium enlarged about 165x. Pollinium are attached by translators at the base of the ovate retinaculum. Pellucid edge difficult to discern.

**Pollinium**

length	0.28 mm
widest	0.12 mm

Retinaculum

length	0.25 mm
ext	0.01 mm

Translators

length	0.08 mm
depth	0.02 mm

Caudicle

bulb diam.	0.04 mm
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Hoya mata-ole-afiensis Kloppenburg

ISSN 2329-7336

Hoya mata-ole-afiensis Kloppenburg, sp nova, holotypus W 2643 (HAW) hic designatus. Similis *Hoya whistlerii* Kloppenburg sed totus parte parviora. Pediceli 1.8 x 0.04 cm contrastre 2.5 x 0.10 et sepala 0.11 x 0.13 contrastre 0.19 x 0.18 cm, Corolla complanatus 1.60 cm contrastre 2.40 cm et coronae lobus 0.18 cm longus contrastre 0.30 cm, differt.

At first I felt this might be *Hoya whistleri* but determined all parts are smaller, it also differs in several respects to *Hoya filiformis* and *Hoya betchei*.

Micro Photos from above holotype sheet W 2643 and data:



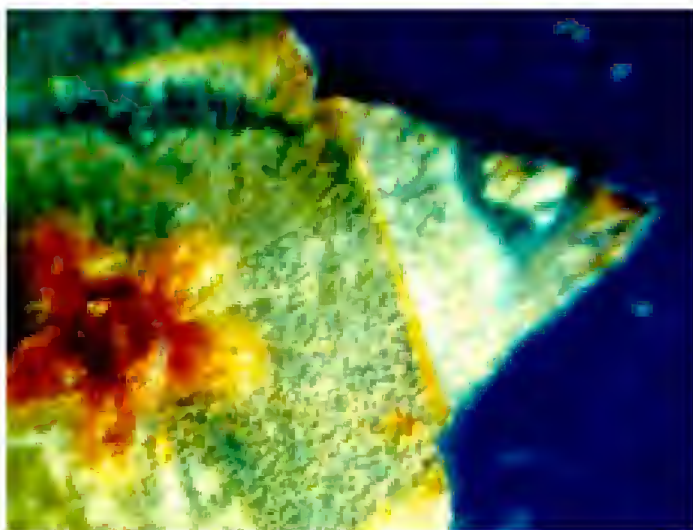
Pedicel with calyx and ovaries showing enlarged about 8x. Here 1.8 cm long, scattered short hairs present, 0.04 cm in diameter, glabrous, terete, lenticular.

Calyx granulose outside, ciliate, broadly triangular apex rounded with the center thickened. 0.11 cm long and 0.13 cm at the widest. Base is enlarged (cup shaped).

Ovaries narrowly domed, 0.10 cm tall and the base pair 0.10 cm wide, glabrous on all surfaces.



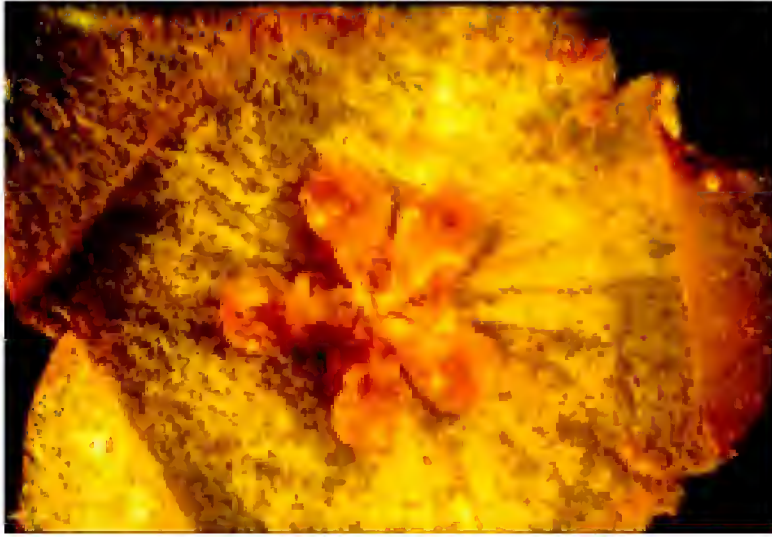
Corolla outside enlarged about 8x. This surface is finely granulose and glabrous. Darker corona showing through the surface, pentagonal lines are due to the folding of the corolla lobes in pressing. Central collar protrudes a little is 0.08 x 0.10 cm in diameter and 0.02 cm tall.



Outside of corolla at the lobe area enlarged about 8x. Apex is acute.

Sinus - sinus	0.45 cm
Sinus - center	0.40 cm
Sinus - apex	0.52 cm
Apex - center	0.80 cm
Widest	0.51 cm

Flower flattened is 1.60 cm in diameter.



Inside view of the flower enlarged about 8x. Corolla inside is puberulous. Inner apices are spatulate and touch in the center. Dorsal is concave, outer apex obtuse. Surfaces are glabrous.



Inside view of the corona enlarged about 16x. The anthers are fluted and crepe-like, shown in the center as yellow with the spatulate anther apex on the scale to the right, other scale ends removed.

Apex - apex and center	0.18 cm
Anther wing - aw.	0.12 cm
Aw. - center	0.10 cm
Retinaculum - ret.	0.05 cm
Ret. - center	0.05 cm



Bottom view of the corona enlarged about 16x, the lobes are channeled all the way to the column that is extras large in the center not very tall. Side lobes that form the central part of the groove begin at the anther wings and converge before reaching the outer lobe apex.



Pollinarium and second retinaculum enlarged about 165x. The inner edges of the pollinia are a little shriveled. The translators are long cupped on top, the caudicle is small: both enter the retinaculum at the waist area. the extensions are long.

Pollinia

length	0.37 mm
widest	0.18 mm

Retinaculum

length	0.15 mm
shoulders	0.12 mm
waist	0.05 mm
hip	0.08 mm
extensions	0.05 mm

Caudicle bulb

diameter	0.04 mm
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Translator/caudicle type: ls/o

Retinacula type: S

Pollinia inner end type: T

Caudicle: G

Description of the above herbarium sheet:

W 2643 3 June 1957. As shown *Hoya filiformis* Reich, relabeled *H. betchei* Schltr. Ded. 1990. Vine with milky sap and flowers white with red in the center, growing over a shrub on the cinder cone near Mata-ole-afi, Savai'i, Samoa, elevation 1500 m. Two stems filiform with 26 leaves, 2 umbels one with 2 flowers. Envelope with 3 flowers one pedicel. Leaves elliptic short attenuate, apex rounded, base narrowly rounded somewhat cuneate, mostly 4 - 4.5 cm long x 1 - 1.2 cm widest near the middle, glabrous, veins obscure but pinnate anastomosing, midrib dark on the bottom. Petioles 0.5 - 0.8 cm long do not appear to be grooved above, from only slightly enlarged nodes darker than stems, glabrous. Internodes 1.8 - 5 cm long, glabrous, terete, fine ca. 0.01 cm in diameter. Peduncle 0.8 - 1 cm long, terete, filiform, rachis 2 x diameter, lighter color, finely bracteate, round here 0.4 cm long. Pedicels very fine, terete, glabrous 2 cm long. Corolla cut 1/2 way. Sepals very small, dark color, linear and outside glabrous.

Note: Ok as *H. filiformis* except peduncle too long 2 vs. 0.08 cm and altitude too high and this is not a glabrous species. Not *H. betchei* as flowers are too small 1.6 vs. 2.4 cm, retinacula too large with only a 2:1 ratio to pollinia, peduncle too short 1 cm. vs. 5-6 cm and pedicels too short 2 vs. 3.5 cm.



Picture from slide taken by Dr. Art Whistler

Hoya lanoto'oensis Kloppenburg

ISSN 2329-7336

Hoya lanoto'oensis Kloppenburg, sp. nova, holotypus W 1617 (HAW) hic designatus, disimilis ab ambo *Hoya chlorantha* Rechinger et *Hoya attenuata* Christopher (see differences below). This new species is distinct in a number of ways, having glabrous pedicels, ciliate sepals, here the corolla is campanulate not flat as in *H. chlorantha*, and coronal lobes different among many other discrepancies.

I thank Dr. Art Whistler for sharing all his herbarium sheets of hoya material collected over the years in Western and American Samoa. He has diligently collected and studied all the flora of these islands as well as that of the Fiji and Tonga Islands and continues to do so.

Photomicrographs of the flowers



Pedicel, calyx and outside portion of the corolla enlarged about 8x. Pedicel here 1.5 cm long, terete, glabrous. The calyx is small, ciliate.



Calyx and pedicel with ovaries exposed enlarged about 8x. Sepals are glabrous, rough outside shiny inside, are broad based ovate-triangular, ciliate with dark ligules; 0.13 cm long x 0.10 cm at the widest, overlapped at the base. Ovaries are narrowly dome shaped 0.13 cm tall and the base pair 0.06 cm wide.



Corolla outside view enlarged about 8x. This surface is granulose, glabrous, lobes are cut a little less than half way and are very broad just above the sinuses where they fold under to form conduplicate edges. The center collar is thickened and protruding.



Flower inside enlarged about 8x. Inside surface of the corolla is puberulent. Coronal lobes do not reach the corolla sinuses.

Sinus - sinus	0.20 cm
Sinus - center	0.38 cm
Sinus - apex	0.40 cm
Apex - center	0.60 cm

Flower flattened is 1.20 cm in diameter.



Top view of the corona enlarged about 8x. Outer coronal lobe is obtuse, inner lobe is tapered spatulate and very thin, dorsal is concave with sharp edges, corona was difficult to separate from the corolla. Inner lobe reaches the center but does not cover the anthers.

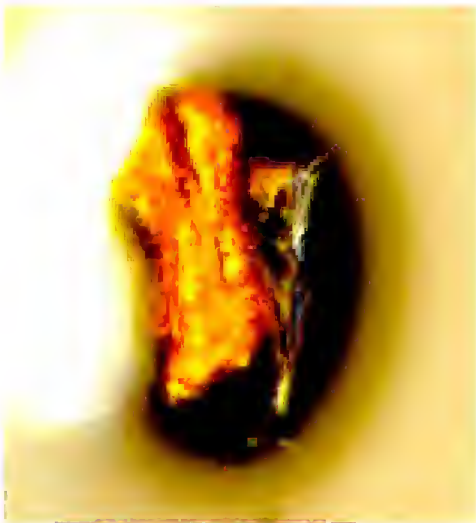
Apex - apex	0.20 cm
Apex - center	0.22 cm



Coronal bottom view enlarged a little over 8x. Glabrous on all surfaces, the lobes are channeled and the edges are diagonally sulcate, lower side lobes reach the apex making it emarginate.



Not very clear pictures of the side view and top view of a coronal scale enlarged about 16x. Details described above. The scaled are rather short and dumpy, anther wings are not prominent.



Retinaculum enlarged about 165x. This structure is very narrow and somewhat deep. It was extremely difficult to get it to lay so the top could be photographed.



A much enlarged view of the retinaculum on its side
This was photographed with a 400x lens so I do not have the exact measurements although the eyepiece reticle has the arrow at 0.1 mm long



Pollinarium enlarged about 165x. Here the retinacula refused to lay flat and is turned again on its side since the width at the tip is very narrow, more narrow than any I have worked with previously.

Pollinium

length	0.49 mm
widest	0.18 mm

Retinaculum

length	0.17 mm
shoulders	0.14 mm
waist	0.05 mm
hip	0.05 mm
extensions	0.02 mm

Translator

length	0.08 mm
depth	0.03 mm

Caudicle bulb

diameter	0.07 mm
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Translator/caudicle type: ls/o **Pollinia inner ends:** R **Retinacula type:** S
:

Description of the herbarium sheet follows: (1617)

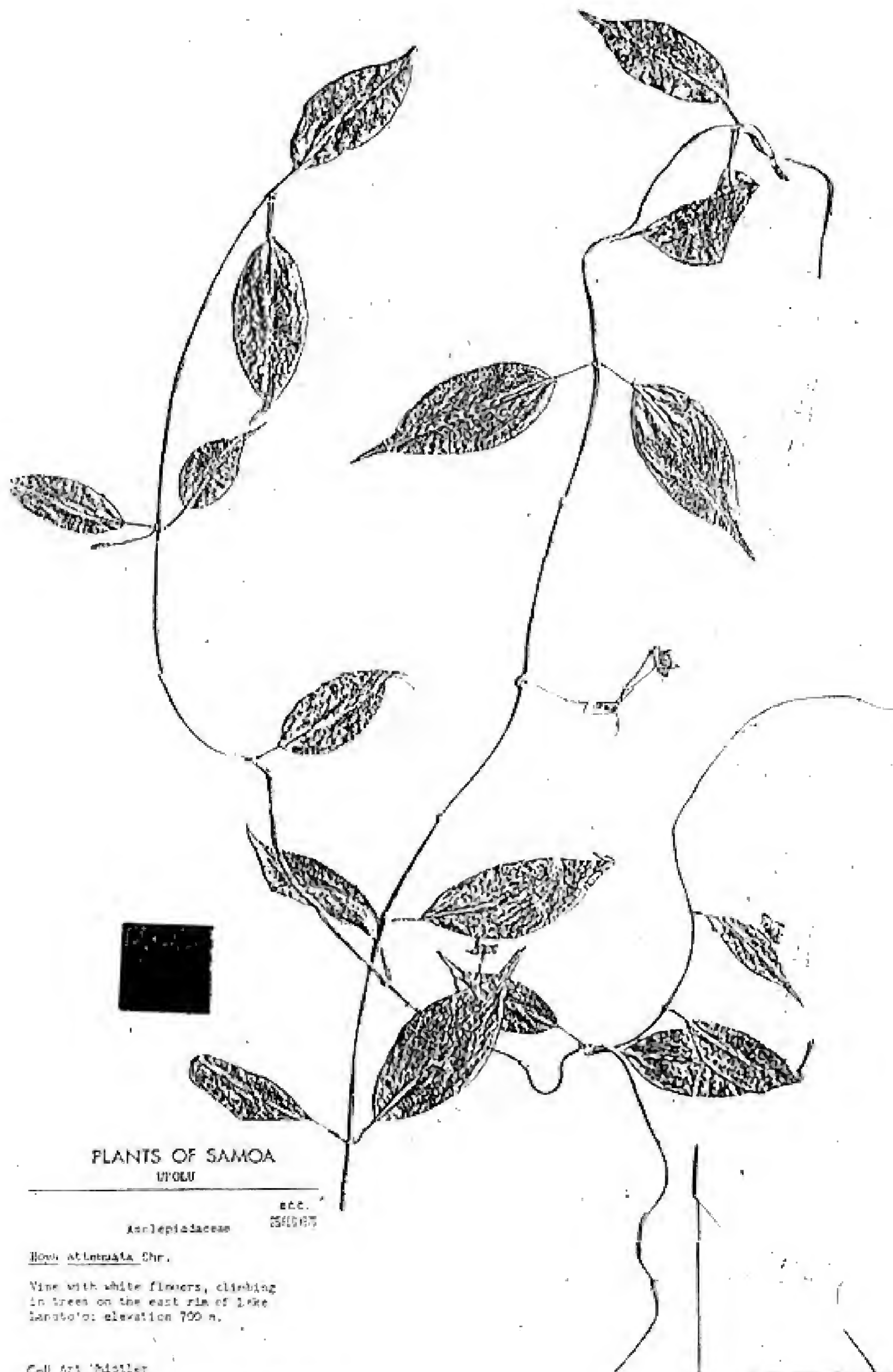
W 1617 *Hoya filiformis* Reich, 17 Feb, 1974 Upolu, Samoa. Vine with white flowers, climbing in trees in the forest on the east rim of Lake Lanoto'o, elevation 700 m. 3 fine stems 14 leaves in all 4 peduncles 1 with 1 pedicel; 1 with 7 flowers. Envelope with pedicel and 5 flowers. Leaves elliptic long attenuate 4 - 5.5 cm long, thin, glabrous, 1.5 - 2 cm at widest near the middle, obscure pinnate-netted nervation, midrib slightly visible below. Petioles 0.5 - 1 cm long, filiform, glabrous, grooved above, do not observe a basal gland. Internodes 6 - 7 cm long, terete, glabrous, stems filiform, nodes slightly enlarged. Peduncles 1 - 1.6 cm long, filiform, glabrous, terete, rachis finely bracteate, round, longest here 0.5 cm x 0.2 cm in diameter. Pedicels filiform 1.5 - 1.7 cm long. Calyx small 1/2 way to the corolla sinuses. Corolla campanulate; outside glabrous.

Note: not *Hoya filiformis*, flowers not flat, flowers not glabrous inside, elevation too high, flowers too large 1.2 cm vs. less than 0.9 cm, peduncle too long 1.6 cm vs. 0.8 cm. Closer to *H. attenuata*, but leaves smaller, leaf margins not revolute. Peduncles and Pedicels not puberulous and pedicels a little shorter, coronal lobes longer 0.20 cm vs. 0.15 cm.

W 1617 17 Feb. 1974 (B) Art Whistler. Vine with white flowers, climbing in trees on the east rim of lake Lanoto'o, elevation 700 m.. As *Hoya attenuata* Christopher. Leaves glabrous, broadly elliptic attenuate, 3.4 - 6.6 cm x 1.3 - 1.9 cm widest; pinnately veined but obscure. (2 long branches, stems very fine, 4 pairs of leaves + 1, and peduncle; 3 pairs of leaves + 2 singles, 2 pedicels, one with 1 flower). Internodes: 4.3 - 10.0 cm long, terete, glabrous, fine. Peduncles 0.9-2.0 cm, rachis round even, 0.7 cm long. Pedicel 1.7 cm long, filiform, terete, glabrous. Corolla campanulate.

Reduced copies of type sheets below:





PLANTS OF SAMOA
UPOLU

Asclepiadaceae
2541067

Hoya attenuata Chr.

Vine with white flowers, climbing
in trees on the east rim of Lake
Lanoto'o; elevation 700 m.

Coll. Art. M. Miller

No. W 1627

5

Date 17 Feb. 1976

Mus. bot. Berol.

Photo as slide taken by Dr. Art Whistler



Hoya fitoensis Kloppenburg
ISSN 2329-7336

Hoya fitoensis Kloppenburg sp. nova, Holotypus # 10007 (HAW) hic designatus. The type sheet was labeled ad *Hoya diptera* Seemann. 10007 is definitely not *Hoya diptera*. Too many flowers/cluster 19 vs. 5-10; pedicels is longer 2.5 vs. 0.8-2.0 cm., calyx larger than diptera 0.07-0.11 vs. 0.18 cm. also the coronal lobes here are concave on top not full and rounded; the inner lobe is spatulate not dentate. (coronal scales altogether different), I consider *Hoya diptera* to be a moderately low elevation species and 10007 was found at 1060m elevation. This new specie is named for the Mt. where it was collected.

Photomicrographs of flower from above herbarium sheet 10007:



Side view of the pedicel, calyx and ovaries enlarged about 16x. Pedicels are 2.5 cm. long, 0.04 cm in diameter, terete, glabrous, longitudinal shriveled.

Sepals are thickened centrally, outside granulose, apex acute, no ligules. Dark colored (red). The apexes do not come near the corolla sinuses. 0.18 cm long and 0.08 cm at the widest 0.25 cm from apex to center.

Ovaries narrowly domed 0.10 cm tall and base pair 0.07 cm wide, glabrous.



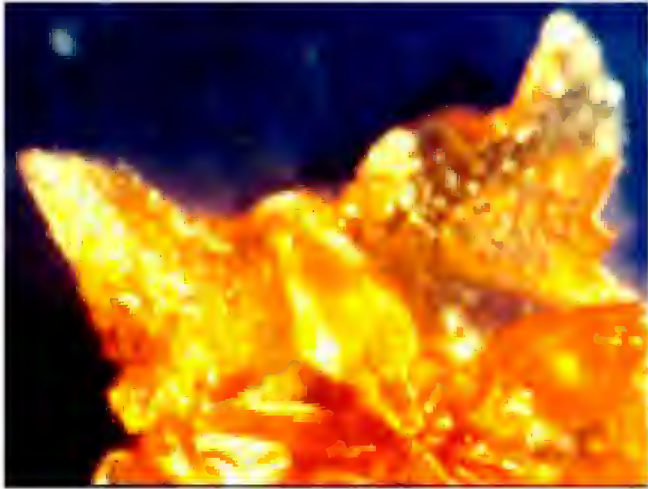
Top view of the calyx enlarged about 16x, center thickened, otherwise membranous.



Outside view of the corolla enlarged about 8x. Outer surface is glabrous, smooth near center granulose outward. Cut less than half way, apex acute. Central collar with 0.10 cm x 0.09 cm opening, 0.04 cm. tall, slightly raised.

Sinus - sinus	0.40 cm
Sinus - center	0.40 cm
Sinus - apex	0.45 cm
Apex - center	0.72 cm

Widest 0.42 cm
Flower flattened is ca. 1.44 cm in diameter.



Inside view of the flower enlarged about 8x. Corolla inside is puberulent, less in the central region under the corona increasing in density outward. Coronal outer apices reach the corolla sinuses. Coronal inner lobe is long and spatulate widest just out from the inner lobe and tapering from there to narrowly rounded outer apex. Dorsal concave. Anther wings prominent.



Bottom view of 3 coronal scaled enlarged about 8x. scales are channeled down center, glabrous, lower side lobes extend to the apex making it emarginate, column thickened 0.07 cm. tall.

Apex - apex	0.37 cm
Apex - center	0.39 cm
Widest	0.15 cm
Anther wing - aw.	0.15 cm
Aw. - center	0.13 cm
Retinaculum - ret.	0.05 cm



Side view of a coronal scale enlarged about 16x. Anther wings are thickened and deeply scythe shaped. Dorsal is horizontal, lower side lobe extend to the outer apex. Scale is relatively thick, glabrous, waxy.



Pollinarium enlarged about 165x.

Pollinia

length	0.52 mm
depth	0.10 mm

Retinaculum

length	0.15 mm
shoulder	0.10 mm
waist	0.05 mm
hips	0.10 mm
extensions	0.03 mm

Translator

length	0.11 mm
depth	ca. 0.02 -0.-05 mm

Caudicle bulb

diameter	0.05 mm
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Retinaculum below not as enlarged.

Translator/caudicle type: ls/o **Retinacula type:** HU **Pollinia inner end type:** S

Caudicle bulb: G

Description by Dr. Art Whistler:

#10007 *Hoya diptera* Seemann. 14 May 1996. Vine with milky sap and white or pink flowers, occasionally in the forest on the west rim of Mt. Fito at 1060 m elevation. 2 stems 1 with 3 single leaves; 1 with 1 pair. Envelope with 19 flowers & some pedicels. Leaves glabrous, elliptic, long attenuate apex, base rounded. 5 - 6 cm long x 2.1 - 2.3 cm at the widest. Nerves pinnate at 45° to the midrib, branching before reaching the margins. Petiole 1.3 cm long and 0.01 cm in diameter, grooved above, glabrous. Internodes mostly 9-10 cm long; nodes a little enlarged, stem 0.03 + cm in diameter. Peduncle not present. Pedicels glabrous, filiform, dark colored, terete, 2.5 cm long and 0.05 cm in diameter.

A reduced copy of the type sheet

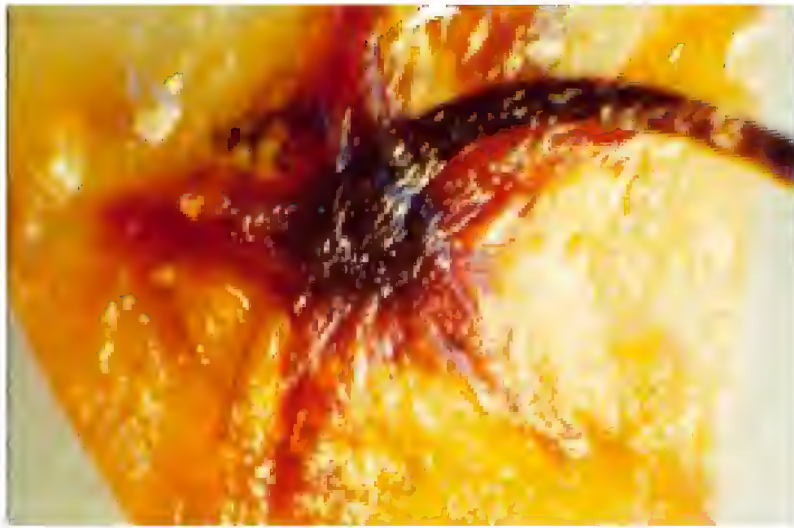


Hoya savaiiensis subsp. falealupoensis Kloppenburg

ISSN 2329-7336

Hoya savaiiensis subsp. falealupoensis Kloppenburg subsp. nova Typus 8232 (HAW) hic designatus. Frutex scandens. Folia elliptic-ovate brevis apiculata, apicae acuto, basi rotundato, glabra, nervis pinnatim; laminis 10.3 - 13.7 cm x 4 - 4.8 cm longis et latis. Petiolo longum ca. 1.1-1.2 cm, glabro. Inflorescentiis umbelliformibus, pedicilli glabri, gracilis, 2.8 cm longi. Sepala triangulari 0.28 cm longo. Corolla diametro complanatus 2.4 cm, extus glabro, intus pubescens. Not Hoya vitiensis since petioles 1.1-1.2 not 0.5-1.5 cm, sepals longer 0.28 cm contrastre 0.175 cm; corolla larger in diameter 2.4 cm contrastre. 2.0 cm and pubescent inside not pustulate and pollinia much larger here 0.65 mm contrastre 0.10 mm.

Photomicrographs and data from a flower from this herbarium sheet:



Outside view of the flower enlarged about 8x. The pedicel is dark colored, curved, 2.8 cm. long, glabrous and 0.06 cm in diameter.

The calyx is also dark colored, linear, ciliate, apex narrowly rounded. 1 ligule present.

Apex - center	0.28 cm
Apex - base	0.20 cm
Widest	0.15 cm



Calyx outside view after removal from the corolla enlarged about 8x.



Inside view of the calyx and ovaries enlarged about 8x. The ovaries are also dark colors, short domed 0.10 cm tall and the base pair are 0.14 cm wide, glabrous.



Corolla outside center with the calyx removed enlarged about 8x. This surface is finely granulate and glabrous. Center collar is nearly round, with thickened edges, opening 0.10 cm in diameter



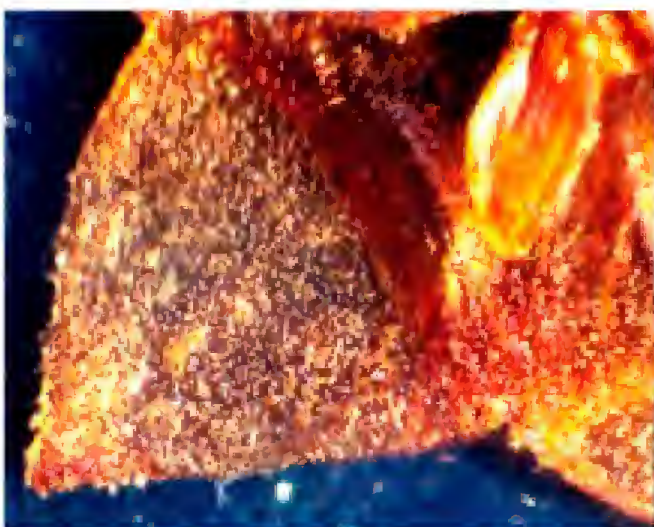
Outside view of the corolla at the lobe enlarged about 8x. Apex is acute.

Sinus - sinus	0.67 cm
Sinus - center	0.67 cm
Sinus - apex	0.70 cm
Apex - center	1.20 cm
Widest	0.73 cm

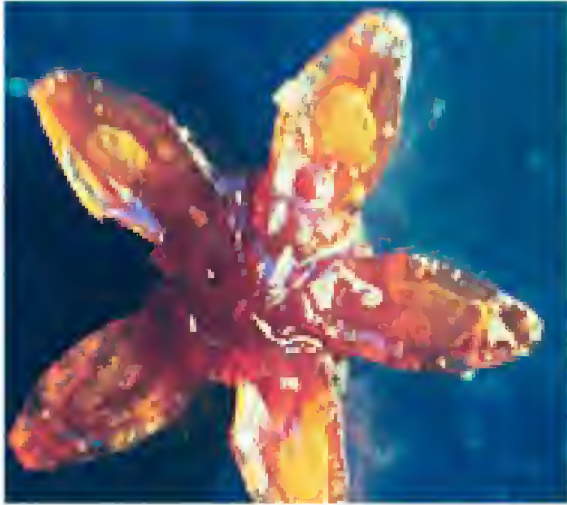
Flower flattened is 2.40 cm in diameter.



Inside view of the flower enlarged about 8x. Coronal lobes are raised in the center, inner lobe is spatulate, dorsal concave with a small umbo near the inner lobe base, outer apex rounded.



Inside view of the flower at the lobe enlarged about 8x. Inside surface is pubescent.



Top view of the corona enlarged about 8x. Inner lobes touch in the center.

Apex -apex	0.43 cm
Widest	0.15 cm
Anther wing - aw.	0.15 cm
Aw. - center	0.15 cm



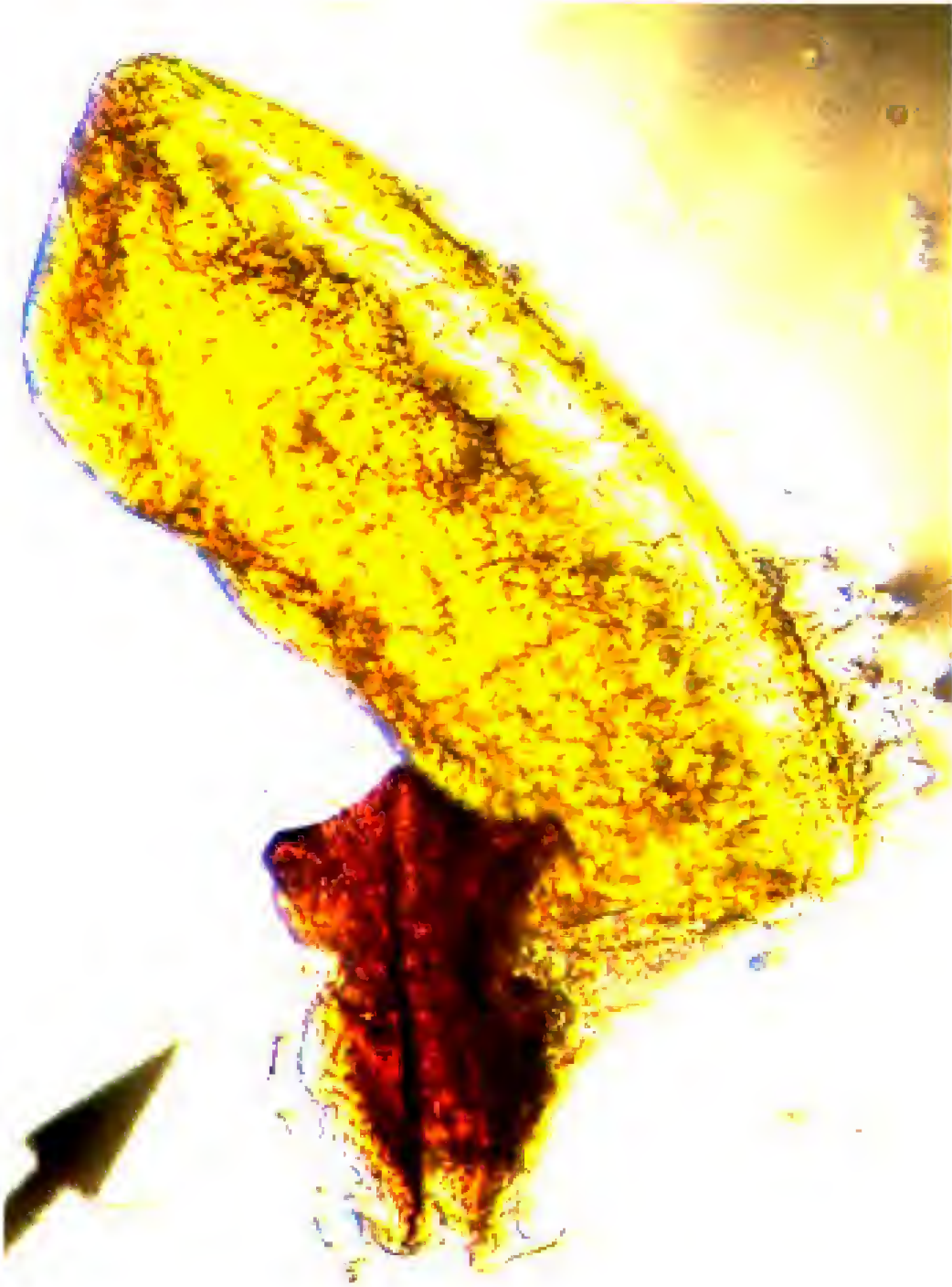
Side view of a coronal scale enlarged about 16x. Dorsal is concave almost horizontal, inner lobe raised, outer rounded. Anther wing scythe shaped.



Bottom view of the corona enlarged about 8x. Lobes are channeled down the center almost to the central column. Lower side shelf reaches the apex.



Top of corona with the styler crown exposed enlarged about 8x. Nothing unusual here a simple domed center.



Pollinarium enlarged about 165 x.

Pollinium

length	0.65 mm
widest	0.25 mm

Retinaculum

length	0.24 mm
shoulders	0.18 mm
waist	0.10 mm
hip	0.15 mm
extensions	0.05 mm

Translator

length	0.15 mm
depth	0.02+ mm

Translator/caudicle type: ls/o

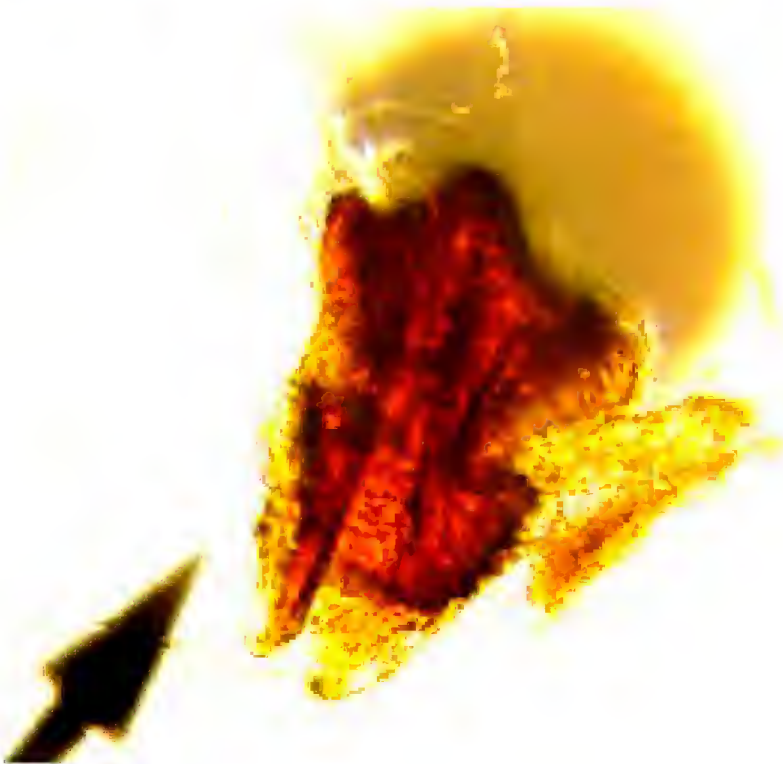
Pollinia inner end type: S (truncate)

Retinacula type: S (shield) but nearly Hands up HU)



Pollinium enlarged about 165x. Here the pollinium is not compressed as above and just slightly longer. 0.68 mm long and 0.26 mm at the widest. Many of the herbarium specimens from Samoa have pollinium which have germinated in place. Here the pollen tubes are emerging and tangled on the left side along the pellucid border.

The caudicle bulb is very faint but like a thickened Y the apex supporting the pollinia end.



Retinaculum again enlarged about 165x, to better show the translator arm (right side). and the small clear caudicle at its apex. Some pollen tubes in the background at upper left.

Description of herbarium sheet below 8232:

Hoya vitensis Turill ? 6 Sept 1991 Savai'i, Samoa. Vine with pale maroon flowers, milky sap, occasional in the lowland forest at Falealupo. Stem with long wide elliptic-ovate leaves of thin texture, drying slate green. 3 leaves 1 flower cluster. Envelope of 8 flowers and 2 pedicels. Leaves broad elliptic-ovate attenuate, glabrous, 10.3- 13.7 cm long, 4 - 4.8 cm widest near the middle, apex acute, base rounded to narrowly cordate, obscure pinnate nervation. Petiole long, glabrous, narrow 1.1 - 1.2 cm long, lightly grooved above. Internodes 10 - 12.5 cm long, terete, glabrous, 0.2 cm in diameter, nodes enlarged, lighter color than the petioles. Peduncle larger than the petioles 5.3 cm long, terete, glabrous, 2nd flowering from bracteoids. Pedicels dark 2.8 cm long, filiform, terete, glabrous. Calyx relatively large but sepal apexes far from reaching the corolla sinuses. Corolla campanulate, cut less than half way, outside glabrous, inside puberulous except in the central sunken area which contains the corona. Corona glabrous, lobes elliptic, outer apex obtuse, inner lobes long, dorsal with a small umbo near the inner lobe base.

Reduced copy of the type sheet

